CLAIMS

We Claim:

1. A radio transceiver comprising:

a reception path;

a transmission path; and

a frequency generator comprising a programmable phase lock loop having an output coupled to the reception path and the transmission path;

wherein the reception path, the transmission path, and the frequency generator share a maximum amount of common circuitry to facilitate implementation of the entire radio transceiver on a single integrated circuit.

2. The radio transceiver as claimed in Claim 1, wherein the reception path includes a radio frequency amplifier for amplifying a radio frequency input signal, the output of the radio frequency amplifier being divided into two equal in-phase signals.

3. The radio transceiver as claimed in Claim 2, wherein the reception path includes an in-phase and quadrature radio frequency mixer for receiving the in-phase signals of the radio frequency amplifier.

4. The radio transceiver as claimed in Claim 3, wherein the radio frequency mixer of the reception path receives in-phase and quadrature signals from the frequency generator and outputs in-phase and quadrature low intermediate frequency signals.

5. The radio transceiver as claimed in Claim 4, wherein the reception path includes an

automatic gain control amplifier receiving the low intermediate frequency signals output from the radio frequency mixer for extending the dynamic range of the intermediate frequency signals.

6. The radio transceiver as claimed in Claim 5, wherein the reception path includes an in-phase and quadrature intermediate frequency filter coupled with the output of the automatic gain control amplifier.

7. The radio transceiver as claimed in Claim 6, wherein the reception path includes an intermediate frequency amplifier coupled with the output of the intermediate frequency filter.

8. The radio transceiver as claimed in Claim 7, wherein the reception path includes a demodulator coupled with the output of the intermediate frequency amplifier.

9. The radio transceiver as claimed in Claim 1, wherein the transmission path includes a transmission data filter and modulator for receiving data signals to be transmitted.

10. The radio transceiver as claimed in Claim 9, wherein the transmission path includes a modulated voltage controlled oscillator receiving a tuning input from the frequency generator and a modulation input from the transmission data filter and modulator.

11. The radio transceiver as claimed in Claim 10, wherein the frequency generator includes a loop filter receiving an input signal from the programmable phase lock loop and providing the voltage controlled oscillator with the tuning input.

12. The radio transceiver as claimed in Claim 10, wherein the transmission path includes a

programmable divider coupled with the output of the modulated voltage controlled oscillator.

13. The radio transceiver as claimed in Claim 12, wherein the transmission path includes an in-phase and quadrature divider receiving the output of the programmable divider and outputting in-phase and quadrature signals.

14. The radio transceiver as claimed in Claim 13, wherein the transmission path includes a transmission amplifier receiving one signal output from the in-phase and quadrature divider, the output of the transmission amplifier being a radio frequency signal to be transmitted.

15. The radio transceiver as claimed in Claim 14, wherein the programmable phase lock loop of the frequency generator receives one signal output from the in-phase and quadrature divider.

16. The radio transceiver as claimed in Claim 13, wherein the radio frequency mixer of the reception path receives the in-phase and quadrature signals from the in-phase and quadrature divider.

17. The radio transceiver as claimed in Claim 9, wherein the transmission path includes up-conversion mixers coupled to in-phase and quadrature signals output from the transmission data filter and modulator.

18. The radio transceiver as claimed in Claim 17, wherein the frequency generator includes a loop filter receiving an input signal from the programmable phase lock loop and transmitting a signal to a voltage controlled oscillator.

19. The radio transceiver as claimed in Claim 18, wherein the frequency generator includes a programmable divider coupled with the output of the voltage controlled oscillator whereby the programmable phase lock loop produces a constant frequency at its output.

20. The radio transceiver as claimed in Claim 19, wherein the frequency generator includes an in-phase and quadrature divider coupled to the output of the programmable divider and generating in-phase and quadrature modulating signals for transmission.

21. The radio transceiver as claimed in Claim 20, wherein the up-conversion mixers are coupled with the modulating signals of the in-phase and quadrature divider.

22. The radio transceiver as claimed in Claim 21, wherein the transmission path includes a summer for combining the signal output of the up-conversion mixers.

23. The radio transceiver as claimed in Claim 22, wherein the transmission path includes a transmission amplifier coupled with the output of the summer to produce the modulated radio frequency output signal for transmission.

24. The radio transceiver as claimed in Claim 9, wherein the programmable phase lock loop of the frequency generator receives a signal output from the in-phase and quadrature divider.

25. The radio transceiver as claimed in Claim 9, wherein the radio frequency mixer of the reception path receives output signals from the in-phase and quadrature divider.